

# Online Exam Cell and Result Analysis Automation

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**Abstract—** Current exam-cell activities are mostly done on paper. Automated solutions using this system will make exam department activities more efficient by covering for the most important drawbacks of manual system, namely speed, precision and simplicity. A centralized system will ensure that the activities in the context of an examination can be managed effectively, while also making it more accessible and convenient for both students and staff. The final product would constitute a computerized module aimed at replicating offline exam cell process. The system is a new concept which came into existence because of the large amount of data being on paper and it made analysis of results a tedious task, apart from the unmanageable amount of data that is generated in an institution from various departments. The Automation system is like an intermediary between staff and students, thus easing the activities of each regarding examination. It is a system that will make the exam cell process much organised. It would require certain crucial data to be pre-existing, which definitely suggest a dependency on certain other systems, especially ones concerning data acquisition. Like in this case it is Automated Admission system. The Solution, however, will manage a great deal of menial work. This keeps paperwork to its minimum, leading to ease of accountability, reducing confusions and increase in work rate and efficiency. The project will address firstly, access to various users including students, teacher, exam cell staff and admin. Then customization based on requirement of College. And finally automated result analysis and ancillary services.

**Index Terms—** Automation, data acquisition.

## I. INTRODUCTION

Examination cell, referred to as the Exam cell is an integral part of college management system. As we all know examination in an engineering student's life is the foremost and an important issue. Hence management of this system requires a huge effort. The basic challenge of an institution is to centralize, track and resolve various student issues before and after the examination, manage the various operations and information in a flawless manner and deliver quality result oriented education.

On a day to day basis, following are the basic problems faced by the institution:

- Operation is centred in administrative offices
- Procedures are heavily bureaucratic
- Information needs to be updated
- Information is inconsistent and replicated

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- Functionality is scattered through organizational units

## II. PURPOSE OF THE PROJECT

Currently Exam cell activity mostly includes a lot of manual calculations and is mostly paper based. The project aims to bring in a centralized system that will ensure the activities in the context of an examination that can be effectively managed.

## III. PROBLEMS IN EXISTING SYSTEM

As discussed earlier existing system is just based on manual paper work and manual calculations. The amount of work makes the exam cell process very slow and tedious. The system requires maintaining a lot of documents. Handling of such important documents is again a tedious work. Also retrieval of important facts and statistics will consume time. Even in case of students, they have to manually do a lot of paper work starting from filling of any exam related form to collecting of final mark sheet. Hence there is a need for a better system

## IV. PROPOSED SYSTEM

The online Exam Cell and Result Analysis System would overcome the flaws and tedious procedures of paper based system. The following are the main objectives of the Online Exam Cell and Result Analysis System:

- 1.To create an Integrated ERP module.
- 2.To bring in centralized system for pre and post-Examination process.
- 3.To make examination and its ancillary process simple from student, teacher and admin point of view.
- 4.Reduce the manual and paper work prevailing.
- 5.To dispatch Hall Ticket
- 6.Reduce the redundancies involved in the entire system.
- 7.Provide direct access of results to the students.
- 8.To provide direct access to examination related notifications to students.
- 9.Provide access to student performance to teachers.

Our project consists of two main users:

- Admin
- Student.

Functionalities for each of them are as specified below.

### Admin user

In the current system Admin will be performing following activities:

- Uploading the previous semester marks

- Issue of hall ticket
- Adding dates for university exams.
- Result Generation
- Statistical Analysis of result

### Student User

Student will be conducting following activities:-

- Login
- For Regular form filling just click on acknowledgement receipt.
- For KT student select the desired subjects which they want to appear and then generate acknowledgement.
- View and download their hall ticket
- View their results online

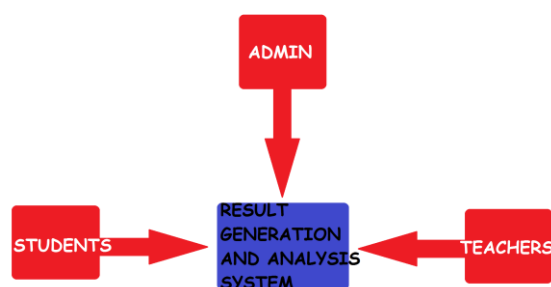


Fig.1: Block Diagram of our System

## V. FEATURES OF OUR PROJECT

### 1. Student Activities

#### 1.1 Login

The system is intelligent, in the view that it uses uploaded mark sheets to recognize students that are not in the database. It then proceeds to fill other student details and also assigns the student a default password and student-access rights. The authentication and authorization is handled using spring security<sup>[1]</sup>.

**Database required:-**

**Table: users**

**Columns:**

<u>username</u>	varchar(255) PK
authority	varchar(255)
password	varchar(255)

This table keeps an account of all the users of the system.

#### 1.2 Form Filling

The form filling feature is one of the most important features of the exam cell module. This feature helps the student to get the various form that he/she need to fill online without waiting in any kind of line in the examination cell. Also, it helps the examination cell personnel to maintain all the forms in a digital way, making it easier for the management and functioning of the examination cell.

Student can avail the form online from his/her account any time he/she want. The student may have to make payment for the forms (as the case may apply) and when the status of

payment is confirmed in the ERP module, the form is made available to the student.

Form filling is categorized into regular form filling and KT form filling. Regular form has to be filled by each and every student. Hence the design of regular form filling is much simpler it just requires the user to directly check the acknowledgement receipt, check their details and download it. The KT form filling on the other hand is slightly more complex. The system keeps track of the KT's of individual students based on the uploaded marks. When a student logs into his account, the system displays only his respective KT's. The student then selects the subjects of his choice for the exam, after which the system provides an acknowledgement pdf.

### 1.3 Hall Ticket Generation

This can be generated only once the Seat Number is generated. This is process diagram of hall ticket generation process. Once the admin makes the hall-tickets available via the dashboard, the student can access his/her exam hall-tickets. The ERP retrieves the Seat Number and other relevant data like name, semester based on the roll number. It populates these data into a hall ticket template. Once the retrieval and populating data to template is successful the ERP module makes the Hall Ticket available for printing.

On student side, on receipt of the hall ticket the student is provided with change request option. If the hall ticket contains any discrepancy or error, the student can request for change in details. The partial Admin checks out for suggested changes, verifies the suggested changes in person from student, make relevant changes and dispatch the revised hall ticket to student.

Once all the requirement for sitting in the examination have been fulfilled by all the students, the module generated the seat numbers for the students. The same with all related details are made into the hall ticket form which the student is then provided to print.

### 2. Admin Side activities

#### 2.1 Seat Number Generation/ Examination roll number

The Examination Roll Number has a particular logic. It involves particular inputs based on which the Exam roll number would be generated.

The screenshot shows a web form titled "Seat Number Generator". It contains four dropdown menus: "Select Type" (set to "CGBS/OLD"), "Year" (set to "4 (for 2014)"), "Half of the year" (set to "1"), and "Branch Code" (set to "3"). Below these fields is a button labeled "Assign Seat".

Fig 2: Seat Number Generation Logic

Once the admin enters the above fields and clicks the Assign Seat button, the generation of Seat Numbers or Exam Roll Number begins. There would be a separate table called Seat Number for particular year. It would have its attributes as Roll Number of student and Exam roll number wherein roll

number acts as both primary and foreign key. Generated Seat numbers would be stored in the Seat Number table. This generated Seat Numbers can be used for the purpose of Generation of hall ticket.

## 2.2 Generate and View Results

Once the credentials of the admin are verified, after the login process the admin can click on generate results. The admin needs to select the year, semester, and particular subject or overall whose result needs to be generated. The ERP module would search for the related results from database, retrieve result related data and process the data as per requirement and display the results. Once the results are generated the admin can opt for analysis and acquire reports on performance of students.

The system uses hibernate<sup>[5]</sup> for database mapping and Spring MVC<sup>[3]</sup> as the web-application framework.

## VI. ADVANTAGES

- Boosts enterprise accessibility
- Faster exam registration
- Easy result generation
- Improved accuracy of student data
- Better convenience for students
- Elimination of red tape in hall-ticket availability

## VII. CONCLUSION

Considering the extremely interwoven nature of exam cell activities, an automated solution to important activities like result analysis and report generation would greatly benefit the institution. The use of up-to-date open-source software ensures a great cost-benefit measure while maintaining productivity, thus improving the student experience and value of education. Further, the implementation of this system can perpetuate the automation of other important activities in the institute, thus making the college more student and staff-friendly. We have been successful in deploying the entire form filling and hall ticket module on intranet.

About the result analysis module, two types of analysis is done: - subject wise and semester wise. For the subject wise analysis we have for a particular semester, its all subjects and its analysis in terms of various grades obtained and in terms of pass percentage of each subject and overall pass percentage of students in a particular semester.

The deployment of form filling module saw a drastic reduction in the amount of time which was taken to fill up the exam form and then submitting it. The module was built keeping in mind all possible mistakes a user can make and the system thus developed was user friendly. KT students just had to select the subjects in which they had KT. Earlier they had to manually write all those subjects in which they didn't have KT, hence it was burden for user and exam cell. For the exam cell, they had to manually go through each and every form and cross check the KT student's form and the subject in which they had KT. With the KT module up and running there is a report dynamically generated giving details regarding all those students who filled the form via our system. All the students were successful in downloading their acknowledgement receipt and then later they just had to take a print of it and submit it to the exam cell. As far as hall ticket is considered, there are two entry points into system first where

exam cell generates the seat number manually and then these seat numbers were fed into the system to generate hall ticket on student's side. Secondly the system generates the seat number from the form filling module and then the hall ticket is prepared.

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